INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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GENERAL

1. The Leningrad Pneumatic Plant (Leningradskiy Zavod Pnevmatika) is located at 27b, 18 Liniya, Vasilevskiy Ostrov, in Leningrad. The plant has no branch railroad line; therefore, it uses the Leningrad Freight Station on the Oktyabr-skaya Railroad. The plant is controlled by the USSR Ministry of Coal Industry and is directly subordinate to the Chief Directorate of Coal-Mining Machine Building (Glavuglemash) of the Ministry.

HISTORY

2. The plant was founded in 1899 and produced pneumatic tools consisting mainly of riveting hammers and piston-type drilling machines. A great many of the parts were obtained from Chicago, USA. After the 1917 Revolution, the plant remained idle until 1922, when restoration was started and, in 1924, production of simple-type pneumatic tools was begun. During both the First and Second Five-Year Plans, the output of the plant increased considerably, and during the Second Five-Year Plan, the plant was reconstructed, new industrial buildings were erected, and a considerable amount of new equipment was installed. The plant belonged to the All-Union State Combine of Machine Tool and Hand Tool Industry (Soyuzstankoinstrument) at that time.

3. Some 24,000 tools of various types were produced in 1940. The plant was evacuated to Siberia during the war and when the war ended in 1945, work on restoring the buildings and equipment in Leningrad was started. By 1946, production of pneumatic tools, consisting mainly of pneumatic drills and drilling machines for the coal mining industry, had begun. In 1947, production of pneumatic tools, such as trimming and riveting hammers, and special drilling machines for the shipbuilding and other industries, and also of pneumatic rammers and vibrators for foundries was started. However, the production of piston-type drilling machines, which replaced the rotor-type drilling machines, had practically ceased.

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4. The number of employees at the plant prior to World War II was about 2,000, and production included:

a. OM-3, OM-5, OMP-5, and OMSP-5 pneumatic drills (otboynyy molotok) for the coal mining industry. The OM-5 and OMSP-5 drills, produced until 1947, were used on steep coal seams of soft and medium hardness and on soft ores. The OM-5 was 400 mm long, weighed 8.6 kgs, had 0.8 hp, four atm pressure, one cu m per minute air consumption; work performed per blow was 3.5 kgs per m, and the diameter of its air hose was 16 mm. The OMSP-5 was 600 mm long, weighed 9.5 kgs, had 0.8 hp, four atm pressure, one cu m per minute air consumption; work performed per blow was 3.5 kgs per m, diameter of the air hose was 16 mm, and the number of blows per minute was 950.[1] The "S" in the drill mark is in honor of Stakhanov who set a record with this drill in the 1930s.

b. BM-13, BM-17, BM-25, RP-21, RPM-21, and UP-1 pneumatic hammer drills (burilnyy molotok) or perforators (perforator). The length of the BM-17 was 495 mm; weight, 17.5 kgs; and consumption of air in cu m per minute, 1.2 - 1.8. The weight of the BM-25 was 25 kgs. All these pneumatic hammer drills were produced in 1946 and 1947.

c. KB-5, KA-3, KA-5, KM-31 pneumatic riveting hammers (klepalnyy molotok).

d. SM-70 (ex-SMO), SM-50 (ex-SM-1), SM-32 (ex-SM-2), SMU-32 (ex-SMU-8), and SM-22 (ex-SM-4) pneumatic piston-type hole drilling machines (sverlilnaya mashina). The "U" denotes an angle machine (uglovaya mashina) which operates in confined spaces. The specifications of these machines, produced in 1946-1947, were as follows:

	SM-70	SM-50	SM-32[2]	SMU-32	SM-22
Maximum diameter of drilling (in mm)	70	50	32	32	22
Maximum diameter of reaming (in mm)	50	38	25	25	16
Maximum depth of drilling (in mm)	125	90	75	45	75
Morse taper	4	4	3	3	2
Hp of machine	1.5	1.4	1	0.3	0.6
Rpm idling	200	260	450	180	475
Rpm under load			225		185
Air consumption (in cu m per minute)	2.6	2	1.3	1.5	0.9
Diameter of hose (in mm)	19	16	16	13	13
Height of machine (in mm)	470	390	330	216	280
Weight of machine (in kgs)	33.5	24	15.5	16.3	10

e. ShR-1, ShR-2 grinding machines (shlifovalnaya mashina).

f. RM-11, RM-15 pneumatic trimming hammers (rubilnyy molotok).

g. Hand rammers (ruchnaya trambovka).

h. Vibrators (vibrator).

5. In 1947, at a conference of the Technical Council for the Mechanization of Work, attached to the USSR Council of Ministers, the RP-17 light pneumatic perforator, manufactured at the Pnevmatika Plant, was approved. Also approved were the PA-23 medium-hand perforator manufactured at the Kommunist Plant; heavy-hand perforators designed at the Molotov Steel Plant No. 172, which belonged to the Ministry of Armaments, to be produced by the Pnevmatika Plant; TTsM-3 and TP-4 telescopic perforators designed by Giprouglemash (State Institute for the Design of Coal Mining Machinery), the TP-4 to be produced by the Pnevmatika Plant; and the KTsM-4 column perforator, designed by Giprouglemash for production by the Pnevmatika Plant.[3] The "M" denoted water washing. Low-power compressed air engines (pnevmaticheskiy dvigatel) and pneumatic lifting apparatus were series produced in 1948. In addition to pneumatic tools, the plant produced the first cross-cut drilling machine (burosboyechnaya mashina) for the coal-mining industry, UDS-1 coal planing machines (ugolnyy strug), and drill sharpeners (burozapravochnyy stanok) from 1949 to 1951. Pneumatic drills, hammer drills, and drilling machines were produced in large series. Compressed air engines of 7.16 and 30 hp were produced. The quality of pneumatic tools improved considerably when compared with the pre-war period.

PRESENT PRODUCTION

6. The plant is now building the eight-kg OM-1 and the 8.2-kg OM-2 improved pneumatic drill. The following trimming and stamping hammers (rubilno-chekanochnyy molotok) are also being produced: The RB-45 (ex-RK-41) for light trimming and stamping, which can trim steel up to 10 mm thick, strikes 2,500 blows per minute, weighs 4.5 kgs, and is 260 mm long. The RB-49 (ex-RK-42) for light trimming and medium stamping, which can trim steel up to 15 mm thick, strikes 2,000 blows per minute, weighs 4.9 kgs, and is 295 mm long. The RB-54 (ex RK-43) for medium trimming and heavy stamping, which can trim steel up to 20 mm thick, strikes 1,500 blows per minute, weighs 5.4 kgs, and is 340 mm long. The RB-58 (ex RK-44) for medium trimming and heavy stamping, which can trim steel up to 25 mm thick, strikes 1,250 blows per minute, weighs 5.8 kgs, and is 380 mm long. The RB-63 for heavy trimming, which can trim steel over 25 mm thick, strikes 1,100 blows per minute, weighs 6.3 kgs, is 410 mm long, has a working air pressure of 5.5 to six atm, and air consumption of 0.55 to 0.65 cu m per minute.[4]

7. Electric drills, including K-6, have been produced since 1947 at the plant. The following riveting hammers with their specifications are being turned out:

Type	Diameter of Rivet (mm)	Working Pressure (atm)	Air Consumption (cu m per minute)	Length (mm)	Weight (kgs)
KB-5	3.5	5.5	0.45	--	2.2
KA-3	3	5.5	0.6	--	2.5
KA-5	5	5.5	0.6	--	2.7
KE-16 (ex KM-31 and KM-21)	16	5.5	1.1	310	9
KE-19 (ex KM-32 and KM-22)	19	5.5	1.1	360	9

KE-22 (ex KM-33 and KM-23)	22	5.5	1.1	410	9.5
KE-28 (ex KM-34 and KM-24)	28	5.5	1.1	460	11
KE-32 (ex KM-35 and KM-25)	32	5.5	1.1	510	12
KT-25	35	5.5	1	300	7

(continued)

Type	Diameter of Hose (mm)	No of Blows (per minute)	Stroke of Striker (mm)	Weight of Striker (kgs)	HP	Work Performed per Blow (kgs)
KB-5	13	2,200				
KA-3	13	3,800				
KA-5	13	2,800				
KE-16 (ex KM-31 and KM-21)	16	1,800	--	--	0.84	2.1
KE-19 (ex KM-32 and KM-22)	16	1,400	108	0.46	0.85	2.7
KE-22 (ex KM-33 and KM-23)	16	1,200	145	0.55	0.88	3.4
KE-28 (ex KM-34 and KM-24)	16	900	182	0.6	0.98	4.4
KE-32 (ex KM-35 and KM-25)	16	800	228	0.65	0.94	5.8
KT-25	16	1,600	--	--	1	2.8

The diameter of the rivet of the KI-5 stirrup hammer (bugelnyy molotok), built by the plant, is four mm.[5]

8. The A-14 pneumatic support (podderzhka) used in riveting is 364 mm long in shifted position, the movement of the riveting die (obzhimka) is 100 mm, weight of the support without the riveting die is 12 kgs, and the diameter of the pneumatic hose is 13 mm. The D-5 pneumatic support is 122 mm long, the movement of the riveting die is 30 mm, weight of the support without the riveting die is 5.1 kgs, and the diameter of the hose is 13 mm.

9. Pneumatic hammer drills, or perforators, have been produced by the plant since 1947 and 1948. Perforators have been manufactured with a device for absorbing dust during drilling since 1953. The specifications are:[6]

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Type	Length (mm)	Weight (kgs)	Diameter of Water Hose (mm)	No of Blows (per minute)	Air Consumption (cu m per minute)
RP-17	556	17		1,900	1.65
RP-17A	550	16.2		1,700	1.8
RPM-17A	570	17.5	13	1,700	1.8
OM-506L	580	30	13	1,700	2.4
TP-4 telescope	1,450	46	13	1,700	2.7
KTsM-4 column-type on special slide	1,560	75	13	1,860	3.2

(continued)

Type	Diameter of Air Hose (mm)	Output (in mm per minute 1st figure refers to granite and 2nd to limestone)	Diameter of Cylinder (mm)	Piston Stroke (mm)	Weight of Piston (kgs)	Work performed (per blow in kgs)	No of Turns of Drill (per minute)
RP-17	16	110/160	60	50	1.7		
RP-17A	16	110/160				2.5	
RPM-17A	16	115/165				2.5	
OM-506L	19	136/200	63.5	65	2	4.0	
TP-4 telescope	25	140/205	76	74	2.55	4.2	135
KTsM-4 column-type on special slide	25	220/380	76.5	75	2.9		

10. Rotor-type ball bearing drilling machines turned out by the plant are of the following types:

	SN-8	SDA-8	SD4-8	SDT-10	SE-13
Maximum diameter of drilling (in mm)	8	8	8	10	13
Rpm under load		300	800	400	600
Rpm while idling	1,800	2,100		700	
Air comsumption (in cu m per minute)	0.55	0.55	0.6	0.55	1.6

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Hp of machine	0.15	0.15	0.15	0.15	1.0
Weight (in kgs)	1.8	1.4	1.4	2.1	4.2
Diameter of air hose (in mm)	13	13	13	13	16

(continued)

	RS-32	RS-22	RSU-32	RS-50
Maximum diameter of drilling (in mm)	32	22	32	50
Rpm under load	220	300	215	185
Rpm while idling				2.6
Air comsumption (in cu m per minute)	2.2	1.1	2.3	2.6
Hp of machine	1.3	0.85	1.3	2
Weight (in kgs)	11.5	9	10	25
Diameter of air hose (in mm)	16	16	16	19

For operating in confined spaces, special detachable angle heads, produced by the plant, can be fitted to the drilling machines. The angle heads can be adjusted to any position.

11. Light-type pneumatic shears (nozhnitsy) are fitted to machines of similar construction to rotor drilling machines. Pneumatic grinding machines built at the plant are of the following types:

Type	Maximum Diameter of Fringing Wheel (in mm)	Air Comsumption (in cu m per minute)
ShR-5	30	0.6
ShR-6	50	1
ShR-12	125	1.6

12. The Pnevmatika Plant builds compressed air engines of various types. These are:

a. The PM-4.5 single-action compressed air engine, which has a 4.5 hp at 3.5 atm pressure, diameter of cylinder of 95 mm, piston stroke of 64 mm, and is 396 mm high, 512 mm long, and 385 mm wide.

b. The DR-5 reversible compressed air engine is intended for the light, LBS-2, cross-cut drilling machine (sboyechno-burovoy stanok) and for other mining machinery where safety arrangements prohibit the employment of electrical machinery. It has five hp at four atm pressure, air consumption of five cu m per minute, shaft rpm of 600-650, and weight of the motor is 92 kgs.

c. The DR-5A reversible compressed air engine is an improved version of the DR-5.

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d. The PRSh-7 was designed by Giprouglemash. It has 7.5 hp at 3.5 atm pressure, shaft rpm of 1,470, hose diameter of 38 mm, and weight of the motor is 186 kgs.

e. The PRSh-16M was also designed by Giprouglemash. It is intended for use with the ST-11 scraper conveyers, for SBM-3 and SBM-3U cross-cut drilling machines, OPL-700 single-drum winches, and other machines. It supersedes the PRSh-16 engine which weighed 336 kgs and consumed about 18 cu m of air per minute. The PRSh-16M has 16 hp at 3.5 atm pressure, shaft rpm of 1,490 and 975, air comsumption of about 16 cu m per minute, and its motor weighs 280 kgs. The change in the rpm of the shaft is brought about by means of a reducing gear. A governor (regulyator) maintains a constant number of rpms within a limit of six percent.

f. The PSh-30M is intended for the KKP-1 coal combine. It has 30 hp at about 4 atm pressure, and its shaft rpm is 900-1,600 and 1,800-2,400. The most economic speeds are between 900-1,600 rpm, and the minumum consumption and highest efficiency are at 1,300 rpm.

13. The UDS-1 dynamic coal plane (dinamicheskiy ugolnyy strug) was designed by Engineer Kuznitsyn (fnu) of the Pnevmatika Plant and is used on coal seams. It is a percussion type (udarnyy tip), which has four electro-pneumatic hammers striking 600-800 blows per minute and performs work at 25 kgs per blows per hammer. The plane produces up to 175 tons of coal per shift under certain conditions, such as preliminary weakening of the coal face. The plane cuts a layer 100-200 mm deep, 400-800 mm high, and, in the same movement, places the coal on a conveyer.

14. Pneumatic lifting apparatus built by the plant are intended for enterprises where special precautions against fire must be taken. These apparatuses are:

a. The PP-2 has a lifting capacity of 150 kgs at five atm presseure and an air consumption of 0.04 cu m per lift; the length of the apparatus from the crane to the frame with a 700 mm load lift is 1,070 mm.

b. The PP-4 has a lifting capacity of 185 kgs at three atm pressure, 235 kgs at four atm pressure, 300 kgs at five atm pressure, 365 kgs at six atm pressure, and 420 kgs at seven atm pressure. The length and weight of the apparatus with a 1,200 mm lift is 1,630 mm and 56 kgs; with a 1,500 mm lift, 1,940 mm and 60 kgs; and with a 1,800 mm lift, 2,250 mm and 64 kgs. The air consumption per lift at a pressure of five atm with a 1,200 mm lift is 0.07 cu m, with a 1,500 mm lift 0.09 cu m, and with a 1,800 mm lift, it is 0.1 cu m.

c. The PP-6 has a lifting capacity of 445 kgs at three atm pressure, 560 kgs at four atm pressure, 710 kgs at five atm pressure, 930 kgs at six atm pressure, and 1,040 kgs at seven atm pressure. The length and weight of the apparatus with a 1,200 mm lift is 1,750 mm and 83 kgs, with a 1,500 mm lift: 2,060 mm and 90 kgs, and with a 1,800 mm lift, it is 2,350 mm and 96 kgs. The air consumption per lift at a pressure of five atm with a 1,200 mm lift is 0.16 cu m; with a 1,500 mm lift, 0.2 cu m; and with a 1,800 mm lift, it is 0.25 cu m.

d. The PP-8 has a lifting capacity of 740 kgs at three atm pressure, 1,050 kgs at four atm pressure, 1,250 kgs at five atm pressure, 1,490 kgs at six atm pressure, and 1,760 kgs at seven atm pressure. The length and weight of apparatus with a 1,200 mm lift is 1,810 mm and 112 kgs; with 1,500 mm lift; 2,120 mm and 121 kgs; and 1,800 mm lift; 2,420 mm and 130 kgs. The air consumption per lift at a pressure of five atm with a 1,200 mm lift is 0.27 cu m; with a 1,500 mm lift, 0.34 cu m; and with a 1,800 mm lift, it is 0.40 cu m.

15. A small number of pneumatic cross-cut drilling machines for use on steep coal seams are produced by the plant. These include the SBM-3U improved model fitted with a pneumatic PRSh-16M reversible motor. It has 16 hp, 1,490 rpm at an air pressure of 3.5 atm, 2,300 mm high, 2,180 mm long, 1,180 mm wide. The weight of the machine with the motor but without drilling tools and other accessories is 2,700 kgs, weight of the drilling tools is about 6,000 kgs, and the output per shift is about 40 m. A new experimental cross-cut drilling machine fitted with a 30 hp Psh-30M pneumatic motor is undergoing tests.

16. The B-50 drill-sharpening machine is a forging machine, which is 1,200 mm long, 1,500 mm wide, 1,365 mm high, weighs 1,780 kgs, has a main piston diameter of 532 mm, diameter of piston of horizontal hammer of 100 mm, five-seven atm air pressure, three-four cu m per minute air consumption, and an output per hour of 60-70 medium-sized drills.

17. The TR-6 is among several types of pneumatic rammers produced by the plant. The VA-45 pneumatic vibrator used on concrete has a weight of five kgs, diameter of the piston is 45 mm, strikes 2,850 blows per minute, has an air comsumption of 0.4 - 0.5 m per minute, and a pressure of 5.5 atm. The VA-60 pneumatic vibrator has a weight of 11.5 kgs, diameter of the piston of 60 mm, strikes 2,400 blows per minute, has an air consumption of 0.75 cu m, and a pressure of 5.5 atm.

18. The ShA-19 pneumatic sleeper-packing apparatus (shpalopodboyka) is used for packing ballast under sleepers when laying rails. Its total length is 1,100 mm, weight is 19 kgs, air consumption is 0.6 -0.75 cu m per minute, number of blows per minute is 1,600, pressure is four-six atm, and performance with sand ballast is up to 95 sleepers in eight hours, and with rubble ballast, the performance is up to 70 sleepers in eight hours.

19. The plant also turns out VP-3, VP-5, and VPM-200 pneumatic ventilators. The diameter of the piping of the VP-3 ventilator is 300 mm, the rpm is 3,000 to 10,000, output is 60 to 100 cu m per minute, compressed air pressure is five-six atm, and it weighs 25 kgs. The diameter of the piping of the VP-5 ventilator is 500 mm, rpm is 3,000 to 10,000, output is 60 to 100 cu m per minute, compressed air pressure is five to six atm, and it weighs 53 kgs.

Output

20. The plant produced about 42,000 pneumatic tools and pieces of machinery of various kinds in 1954. Large coal mining machines were produced only in small numbers.

Personnel

21. The management of the Leningrad Pneumatic Plant includes: Director Lavrentiyev (fnu) who replaced V. V. Ivanov, Chief Engineer Treshkov (fnu), Chief Designer Zelenetskiy (fnu), Deputy Chief Designer Kuznitsyn (fnu), Chief Technologist Oikhber (fnu), Chief Mechanic Gatsko (fnu), and Production Chief Knyashchinskiy (fnu).

Shops

22. The shops in the plant are:

First Machine Shop (pervyy mekhanicheskiy tsekh)

Second Machine Shop (vtoroy mekhanicheskiy tsekh)

First Machine Assembly Shop (pervyy mekhanosborochnyy tsekh)

Second Machine Assembly Shop (vtoroy mekhanosborochnyy tsekh)

Thermic shop (termicheskiy tsekh)

Tool shop (instrumentalnyy tsekh)

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Preparatory shop (zagotovitelnyy tsekh), with foundry and forge

Small series shop (tsekh melkikh serii)

Drilling machine shop (tsekh sverlilnykh mashin)

Pneumatic hammer shop (tsekh pnevmaticheskikh molotkov)

Compressed air engine shop (tsekh pnevmaticheskikh dvigateley)

Machine repair shop (remontno-mekhanicheskiy tsekh)

Experimental shop (eksperimentalnyy tsekh)

Laboratories (laboratorii)

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Comments:

1. According to other available information, the weight of the OMSP-5 was 10.5 kgs, and its hp was 0.63.

2. According to other available information, the maximum depth of drilling of the SM-32 was 90 mm, hp was 1.15, rpm under load 215, air consumption in cu m per minute 1.25, and the weight of the machine was 17 kgs.

3. There is a Kommunist Mining Equipment Plant at Krivoy Rog in the Ukrainian SSR.

4. According to other available information, the RB-45 trimming and stamping hammer strikes 2,200 blows per minute and is 319 mm long; the RB-49 strikes 1,700 blows per minute and is 355 mm long; the RB-54 strikes 1,400 blows per minute, weighs five kgs, and is 397 mm long; the RB-48 strikes 1,200 blows per minute and is 437 mm long; the RB-63 strikes 1,000 blows per minute, is 467 mm long, and has a working air pressure of five atm.

5. According to other available information, the working pressure of the KE-16, KE-19, KE-22, KE-28, and the KE-32 riveting hammers is five atm, and their air consumption is one cu m per minute. The length of the KE-16 is 309 mm and the weight is eight kgs, while the lengths of the KE-19 is 361 mm, KE-22 is 411 mm, KE-28 is 461 mm, and the KE-32 is 511 mm. The number of blows struck per minute by the KE-16 is 1,900, KE-19 1,500, KE-22 1,100, and KE-28 950. The work performed per blow by the KE-16 is two kgs, KE-19 2.5, KE-22 3.3, KE-28 4.1, and by the KE-32 5.4 kgs.

6. According to other available information, the length of the RP-17 and the RPM-17 pneumatic hammer drill is 550 mm; weight 16.5 kgs; number of blows, 1,800 per minute; air consumption 1.8-two cu m per minute; diameter of air hose 19 mm; work performed 2.5 kgs per blow; and 36 turns of the drill per minute. The diameter of the cylinder of the RP-17A is 60 mm, of the RPM-17A 60 mm, and of the OM-506L 65 mm. The RPM-17A has 36 turns of the drill per minute, and the TP-4 75 turns per minute. The number of blows of the KTsM-4 is 1,750 per minute; air consumption 2.7-three cu m per minute; work performed 8.5 kgs per blow; and it has 200 turns of the drill per minute.

7. According to other available information, the rpm under load of the RS-32 rotor-type ball bearing drilling machine is 300 and for the RS-22 225 rpm. The hp of the RS-32 is 1.7 and for the RS-22 1.3. The air consumption of the RS-22 is 1.7 cu m per minute.

8. According to other available information, the name of the chief technologist at the Leningrad Pneumatic Plant was given as Oykhberg (fnu).

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